<u>In the Claims</u>:

Claims 1-51 are pending in this application, and the status of those claims are listed below:

1. (Previously presented) A method of determining an optimum bit load per subchannel in a multicarrier system with forward error correction, comprising:

computing one or more values of a number of bit positions *b* of a quadrature-amplitude-modulation symbol, based on one or more values of a number of symbols in the information field *K*, and one or more values of a number of control code symbols per discrete-multi-tone symbol *z*, to provide one or more determined values of *b*, in accordance with the following relationship:

$$1-\left(1-W(s,z,K)\varepsilon_S^{\frac{1}{0.5\cdot sz+1}}\right)^{1/\alpha}$$
$$=\omega\left(b\left(\gamma_{eff},s,z\right)\right)\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right),$$
$$\times\left[2-\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right)\right]$$

$$W(s,z,K)=\left[\frac{\Gamma(K+\rho s+sz)}{\Gamma(K+\rho s+0.5\cdot sz)\Gamma(0.5\cdot sz+1)}\right]^{-1/(0.5\cdot sz+1)}$$

$$\omega(b)=\frac{4}{2b+3},$$

Γ(x)=(x-1)!, and

$$b\left(\gamma_{eff},s,z\right)=\frac{\alpha}{sn_{eff}}(K+\rho s+zs)$$

s represents a number of discrete-multi-tone symbols in a frame, ε_S represents a symbol error rate, α represents the size of a code symbol, ρ represents a framing mode index, *ω(b)* represents an average fraction of erroneous bits in an erroneous *b*-sized quadrature-

amplitude-modulation symbol, γ_{eff} represents an effective signal-to-noise ratio, and n_{eff} represents an effective number of subchannels; and

selecting the value of K and the value of z which provides a maximum number of bit positions based on the one or more determined values of b.

2. (Original) The method of claim 1 wherein the effective signal-to-noise ratio γ_{eff} is an average signal-to-noise ratio of at least a subset of the channels.

3. (Previously presented) The method of claim 1 wherein the size of the frame ranges from 0 to N_{max}-s-zs symbols, where N_{max} is a predetermined value.

4. (Previously presented) The method of claim 1 further comprising:

determining a difference $\Theta(K)$ between a bit error rate prior to decoding and a target bit error rate (p_e) based on one or more values of a length of an information field K within a range from 0 to N_{max}-ρs-sz, where N_{max} is a predetermined value, in accordance with the following relationship:

$$\Theta(K) = \omega(b(\gamma_{eff}, s, z))p_{QAM} - p_e, \text{ and}$$

$$\omega(b(\gamma_{eff}, s, z))p_{QAM}$$
$$= \omega\left(\frac{\alpha}{sn_{eff}}(K + \rho s + zs)\right)\left(1 - 2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)erfc\left(\sqrt{3 \cdot 10^{\gamma_{eff}/10} / \left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1} - 2\right)}\right)$$
$$\times\left[2 - \left(1 - 2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)erfc\left(\sqrt{3 \cdot 10^{\gamma_{eff}/10} / \left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1} - 2\right)}\right)\right]$$

$$p_e = \left[1 - \left(1 - W(s, z, K)\varepsilon_S^{\frac{1}{0.5 \cdot sz+1}}\right)^{1/\alpha}\right]$$

wherein p_{QAM} represents a probability of error in transmitting a quadrature-amplitude-modulation waveform representing a 2^b point constellation ; and

comparing the value of $\Theta(0)$ and $\Theta(N_{max}$-s-$zs)$ to 0; and

setting the value of K in response to the comparing.

5. (Previously presented) The method of claim 4 further comprising: when $\Theta(0)<0$ and $\Theta(N_{max}-s-sz)<0$, setting $K=N_{max}-s-zs$.

6. (Previously presented) The method of claim 4 further comprising: setting $b(\gamma_{eff}, s, z)$equal to $(\alpha N_{max})/(s n_{eff})$ for all values of γ_{eff} and z.

7. (Previously presented) The method of claim 4 wherein when $\Theta(0)>0$ and $\Theta(N_{max}-s-sz)>0$, setting $K=N_{max}-1$.

8. (Previously presented) The method of claim 7 further comprising: setting $s=1$ *and* $z=0$.

9. (Currently amended) A method of selecting forward error correction parameters in a channel having a plurality of subchannels in a multicarrier communications system, comprising:

~~determining a signal-to-noise ratio representing a subset of the subchannels to provide a representative performance measurement;~~

storing, in a table, <u>selected sets of forward error correction parameters and net coding gains from using the sets, the sets including at least a</u> ~~the~~ number (s) of discrete multi-tone symbols in a forward-error-correction frame[[,]] <u>and a</u> ~~the~~ number (z) of forward-error-correction control symbols in the discrete multi-tone symbol<u>, the sets and the net coding gains corresponding to combinations of a</u> ~~associated with the~~ signal-to-noise ratio[[,]] and ~~the~~ <u>a</u> number of subchannels <u>carrying the discrete multi-tone symbols</u> ~~associated with the signal-to-noise ratio, and a net coding gain for different values of s, z, signal-to-noise ratios and numbers of subchannels~~;

<u>determining a signal-to-noise ratio representing a set of the subchannels carrying the discrete multi-tone symbols;</u> and

<u>using the table,</u> selecting <u>a particular set of</u> forward error correction parameters ~~of~~ <u>for</u> the channel based on <u>at least</u> the net coding gain <u>for the particular set</u> ~~by applying an approximation to a subset of values in the table~~.

10. (Original) The method of claim 9 wherein the approximation is a bilinear approximation.

11. (Currently amended) A method of selecting forward error correction parameters in a channel having a plurality of subchannels in a multicarrier communications system, comprising:

~~determining a signal-to-noise ratio representing a subset of the subchannels to provide a representative performance measurement;~~

storing, in a table, selected sets of forward error correction parameters and net coding gains from using the sets, the sets including at least a ~~the~~ number (*s*) of discrete multi-tone symbols in a forward-error-correction frame, a ~~the~~ number (*z*) of forward-error-correction control symbols in the discrete multi-tone symbol ~~associated with the signal-to-noise ratio~~, the maximum number of transmissions (*k*), the sets and the net coding gains corresponding to combinations of a ~~associated with the~~ ~~and the number of subchannels associated with the~~ signal-to-noise ratio[[,]] and a ~~net coding gain for different values of s, z, signal-to-noise ratios and numbers~~ a number of subchannels carrying the discrete multi-tone symbols;

determining a signal-to-noise ratio representing a set of subchannels carrying the discrete multi-tone symbols; and

using the table, selecting a particular set of forward error correction parameters ~~of~~ for the channel based on at least the net coding gain for the particular set ~~by applying an approximation to a subset of values in the table~~.

12. (Original) The method of claim 11 wherein the approximation is a bilinear approximation.

13. (Original) The method of claim 11 wherein and the values of *s* and *z* are in accordance with the G.dmt standard.

14. (Original) The method of claim 13 wherein the values of *s* and *z* are in accordance with the G.lite standard, such that a subset of the tables associated with the values of *s* and *z* in accordance with the G.dmt standard are used when the channel uses the G.lite standard.

15. (Original) A method of increasing a bit load of a multicarrier system comprising a channel having a plurality of subchannels, comprising:

determining a bit load for at least one subchannel based on a target symbol error rate ε_s, a maximum number of symbol errors that can be corrected t, a number of symbols in an information field K, and a maximum number of transmissions k, and a number of bits per subchannel; and

selecting the maximum number of symbol errors t, the number of symbols in the information field K and the maximum number of transmissions k, such that a net coding gain is increased, and wherein t, K and k are also selected such that no forward error correction is applied when the number of subchannels exceeds a predetermined threshold number of subchannels.

16. (Original) The method of claim 15 wherein the channel uses the G.dmt standard.

17. (Original) The method of claim 15 wherein the channel uses the G.lite standard.

18. (Previously presented) A method of determining an optimum bit load per subchannel in a multicarrier system with forward error correction, comprising:

computing one or more values of a number of bit positions b of a quadrature-amplitude-modulation symbol based on one or more values of a number of symbols in an information field K, one or more values of a number of control code symbols per discrete-multi-tone symbol z, and a maximum number of transmissions k, to provide one or more determined values of b, in accordance with the following relationship:

$$1-\left(1-W(s,z,K,k)\varepsilon_S^{\frac{1}{k(0.5sz+1)}}\right)^{1/\alpha}$$
$$=\omega(b(\gamma_{eff},s,z))\left(1-2^{-b(\gamma_{eff},s,z)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b(\gamma_{eff},s,z)+1}-2\right)}\right)$$
$$\times\left[2-\left(1-2^{-b(\gamma_{eff},s,z)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b(\gamma_{eff},s,z)+1}-2\right)}\right)\right]$$

$$W(s,z,K,k)=\left[\frac{\Gamma(K+\rho s+sz)}{\Gamma(K+\rho s+0.5\cdot sz)\Gamma(0.5\cdot sz+1)}\right]^{-1/(0.5\cdot sz+1)}\left[\frac{\Gamma(K+\rho s+sz+1)}{\Gamma(K+\rho s+0.5\cdot sz)\Gamma(0.5\cdot sz+2)}\right]^{-(k-1)/(0.5\cdot sz+1)k}$$

$$\omega(b)=\frac{4}{2b+3},$$

Γ(x)=(x-1)!, and

$$b(\gamma_{eff},s,z)=\frac{\alpha}{sn_{eff}}(K+\rho s+zs)$$

s represents a number of discrete-multi-tone symbols in a frame, ε_s represents a symbol error rate, α represents the size of a code symbol, $\omega(b)$ represents an average fraction of erroneous bits in an erroneous b-sized quadrature-amplitude-modulation symbol, γ_{eff} represents an effective signal-to-noise ratio, ρ represents a framing mode index; and n_{eff} represents an effective number of subchannels; and

selecting the value of K and the value of z which provides a maximum number of bit positions based on the one or more determined values of b.

19. (Original) The method of claim 18 wherein the effective signal-to-noise ratio γ_{eff} is an average signal-to-noise ratio of at least a subset of the channels.

20. (Previously presented) The method of claim 18 wherein the size of the frame ranges from 0 to N_{max}-ρs-sz symbols, where N_{max} is a predetermined value.

21. (Previously presented) The method of claim 18 further comprising:

determining a difference $\Theta(K)$ between a bit error rate prior to decoding and a target bit error rate (p_e) based on one or more values of a length of an information field K within a range from 0 to N_{max}-ρs-sz, where N_{max} is a predetermined value, in accordance with the following relationship:

$$\Theta(K)=\omega\left(\frac{\alpha}{sn_{eff}}(K+\rho s+zs)\right)\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)erfc\left(\sqrt{3\cdot10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)$$

$$\times\left[2-\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)erfc\left(\sqrt{3\cdot10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)\right]$$

$$-\left[1-\left(1-W(s,z,K,k)\varepsilon_S^{\frac{1}{k(0.5\cdot sz+1)}}\right)^{1/\alpha}\right]$$

wherein p_{QAM} represents a probability of error in transmitting a quadrature-amplitude-modulation waveform representing a 2^b point constellation,; and

comparing the value of $\Theta(0)$ and $\Theta(N_{max}\text{-}\rho s\text{-}sz)$ to 0; and

setting the value of K in response to the comparing.

22. (Previously presented) The method of claim 21 wherein when $\Theta(0)<0$ and $\Theta(N_{max}\text{-}\rho s\text{-}sz)<0$, setting $K=N_{max}\text{-}\ \rho s\text{-}sz$.

23. (Previously presented) The method of claim 18 further comprising:

setting $b(\gamma_{eff}, s, z)$ equal to $(\alpha\ \mathrm{N}_{\max})/(s\ n_{eff})$ for all values of γ_{eff} and z.

24. (Original) The method of claim 18 wherein when $\Theta(0)>0$ and $\Theta(N_{max}\text{-}\rho s\text{-}sz)>0$, setting $K=N_{max}\text{-}\rho$.

25. (Previously presented) The method of claim 24 further comprising:

setting s=1 and z=0.

26. (Previously presented) An apparatus for determining an optimum bit load per subchannel in a multicarrier system with forward error correction, comprising:

means for computing a number of bit positions b of a quadrature-amplitude-modulation symbol based on one or more values of a number of symbols in the information field K and one or more values of a number of control code symbols per discrete-multi-tone symbol z, to provide one or more determined values of b, in accordance with the following relationship:

$$1-\left(1-W(s,z,K)\varepsilon_S^{\frac{1}{0.5\cdot sz+1}}\right)^{1/\alpha}$$
$$=\omega\left(b\left(\gamma_{eff},s,z\right)\right)\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right),\text{ and}$$
$$\times\left[2-\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right)\right]$$

$$W(s,z,K)=\left[\frac{\Gamma(K+\rho s+sz)}{\Gamma(K+\rho s+0.5\cdot sz)\Gamma(0.5\cdot sz+1)}\right]^{-1/(0.5\cdot sz+1)}$$

$$\omega(b)=\frac{4}{2b+3},\ \alpha v\delta$$

$$\Gamma(x)=(x-1)!,$$

s represents a number of discrete-multi-tone symbols in a frame, ε_s represents a symbol error rate, α represents the size of a code symbol, ρ represents a framing mode index,, $\omega(b)$ represents an average fraction of erroneous bits in an erroneous b-sized quadrature-amplitude-modulation symbol, γ_{eff} represents an effective signal-to-noise ratio, and n_{eff} represents an effective number of subchannels; and

means for selecting the value of K and the value of z which provides a maximum number of bit positions based on the one or more determined values of b .

27. (Original) The apparatus of claim 26 wherein the effective signal-to-noise ratio γ_{eff} is an average signal-to-noise ratio of at least a subset of the channels.

28. (Previously presented) The apparatus of claim 26 wherein the size of the frame ranges from 0 to N_{max}-s-zs symbols, where N_{max} is a predetermined value.

29. (Previously presented) The apparatus of claim 26 further comprising:

means for determining a difference $\Theta(K)$ between a bit error rate prior to decoding and a target bit error rate (p_e) based on one or more values of a length of an information field K within a range from 0 to N_{max}-ρs-sz, where N_{max} is a predetermined value, in accordance with the following relationship:

$$\Theta(K)=\omega(b(\gamma_{eff},s,z))p_{QAM}-p_e\text{, and}$$

$$\omega(b(\gamma_{eff},s,z))p_{QAM}$$
$$=\omega\left(\frac{\alpha}{sn_{eff}}(K+\rho s+zs)\right)\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)$$
$$\times\left[2-\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)\right]$$

$$p_e=\left[1-\left(1-W(s,z,K)\varepsilon_S^{\frac{1}{0.5\cdot sz+1}}\right)^{1/\alpha}\right]$$

wherein p_{QAM} represents a probability of error in transmitting a quadrature-amplitude-modulation waveform representing a 2^b point constellation; and

means for comparing the value of $\Theta(0)$ and $\Theta(N_{max}\text{-}s\text{-}zs)$ to 0; and

means for setting the value of K in response to the means for comparing.

30. (Previously presented) The apparatus of claim 29 wherein when $\Theta(0)<0$ and $\Theta(N_{max}\text{-}s\text{-}sz)<0$, said means for setting sets $K=N_{max}\text{-}s\text{-}zs$.

31. (Previously presented) The apparatus of claim 30 further comprising:

means for setting $b(\gamma_{eff}, s, z)$equal to $(\alpha\ N_{max})/(s\ n_{eff})$ for all values of γ_{eff} and z.

32. (Previously presented) The apparatus of claim 30 wherein when $\Theta(0)>0$ and $\Theta(N_{max}\text{-}s\text{-}sz)>0$, said means for setting sets $K=N_{max}\text{-}1$.

33. (Previously presented) The apparatus of claim 32 wherein said means for setting sets s=1 and z=0.

34 (Currently amended) An apparatus for selecting forward error correction parameters in a channel having a plurality of subchannels in a multicarrier communications system, comprising:

~~means for determining a signal-to-noise ratio representing a subset of the subchannels to provide a representative performance measurement;~~

means for storing, in a table, selected sets of forward error correction parameters and net coding gains from using the sets, the sets including at least a ~~the~~ number (*s*) of discrete multi-tone symbols in a forward-error-correction frame[[,]] and a ~~the~~ number (*z*) of forward-error-correction control symbols in the discrete multi-tone symbol , the sets and the net coding gains corresponding to combinations of a ~~associated with the~~ signal-to-noise ratio[[,]] and ~~the~~ a number of subchannels carrying the discrete multi-tone symbols ~~associated with the signal-to-noise ratio, and a net coding gain for different values of *s*, *z*, signal-to-noise ratios and numbers of subchannels~~;

means for determining a signal-to-noise ratio representing a set of the subchannels carrying the discrete multi-tone symbols; and

means for selecting a particular set of forward error correction parameters ~~of~~ for the channel based on at least the net coding gain for the particular set ~~by applying an approximation to a subset of values in the table~~.

35 (Original) The apparatus of claim 34 wherein the approximation is a bilinear approximation.

36. (Currently amended) An apparatus for selecting forward error correction parameters in a channel having a plurality of subchannels in a multicarrier communications system, comprising:

~~means for determining a signal-to-noise ratio representing a subset of the subchannels to provide a representative performance measurement;~~

means for storing, in a table, selected sets of forward error correction parameters and net coding gains from using the sets, the sets including at least a ~~the~~ number (*s*) of discrete multi-tone symbols in a forward-error-correction frame, a ~~the~~ number (*z*) of forward-error-correction control symbols in the discrete multi-tone symbol ~~associated with the signal-to-noise ratio~~, the maximum number of transmissions (*k*), the sets and the net coding gains corresponding to combinations of a ~~associated with the~~ ~~and the number of subchannels associated with the~~ signal-to-noise ratio[[,]] and a ~~net coding gain for different values of *s*, *z*, signal-to-noise ratios and numbers~~ a number of subchannels carrying the discrete multi-tone symbols;

means for determining a signal-to-noise ratio representing a set of subchannels carrying the discrete multi-tone symbols; and

means for selecting a particular set of forward error correction parameters ~~of~~ for the channel based on at least the net coding gain for the particular set ~~by applying an approximation to a subset of values in the table~~.

37. (Original) The apparatus of claim 36 wherein the approximation is a bilinear approximation.

38. (Original) The apparatus of claim 36 wherein the values of s and z are in accordance with the G.dmt standard.

39. (Original) The apparatus of claim 38 wherein the values of s and z are in accordance with the G.lite standard, such that a subset of the tables associated with the values of s and z in accordance with the G.dmt standard are used when the channel uses the G.lite standard.

40. (Currently amended) An apparatus for increasing a bit load of a multicarrier system comprising a channel having a plurality of subchannels, comprising:

means for determining a bit load for at least one subchannel based on a target symbol error rate ε_s, a maximum number of symbol errors that can be corrected t, a number of symbols in an information field K, and a maximum number of transmissions k, and a number of bits per subchannel; and

means for selecting ~~the~~ a maximum number of symbol errors t, the number of symbols in the information field K and the maximum number of transmissions k, such that a net coding gain is increased wherein the means for also selects t, K and k such that no forward error correction is applied when the number of subchannels exceeds a predetermined threshold number of subchannels.

41. (Previously presented) An apparatus for determining an optimum bit load per subchannel in a multicarrier system with forward error correction, comprising:

means for computing one or more values of a number of bit positions b of a quadrature-amplitude-modulation symbol based on one or more values of a number of symbols in an information field K, one or more values of a number of control code

symbols per discrete-multi-tone symbol z, and a maximum number of transmissions k, to provide one or more determined values of b, in accordance with the following relationship:

$$1-\left(1-W(s,z,K,k)\varepsilon_S^{\frac{1}{k(0.5sz+1)}}\right)^{1/\alpha}$$
$$=\omega\left(b\left(\gamma_{eff},s,z\right)\right)\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right)$$
$$\times\left[2-\left(1-2^{-b\left(\gamma_{eff},s,z\right)/2}\right)erfc\left(\sqrt{3\cdot10^{\gamma_{eff}/10}/\left(2^{b\left(\gamma_{eff},s,z\right)+1}-2\right)}\right)\right]$$

$$W(s,z,K,k)=\left[\frac{\Gamma(K+\rho s+sz)}{\Gamma(K+\rho s+0.5\cdot sz)\Gamma(0.5\cdot sz+1)}\right]^{-1/(0.5\cdot sz+1)}\left[\frac{\Gamma(K+\rho s+sz+1)}{\Gamma(K+\rho s+0.5\cdot sz)\Gamma(0.5\cdot sz+2)}\right]^{-(k-1)/(0.5\cdot sz+1)k}$$

$$b\left(\gamma_{eff},s,z\right)=\frac{\alpha}{sn_{eff}}(K+\rho s+zs)$$

$$\omega(b)=\frac{4}{2b+3},\text{ and}$$

$$\Gamma(x)=(x-1)!,$$

s represents a number of discrete-multi-tone symbols in a frame, ε_s represents a symbol error rate, α represents the size of a code symbol, $\omega(b)$ represents an average fraction of erroneous bits in an erroneous b-sized quadrature-amplitude-modulation symbol, γ_{eff} represents an effective signal-to-noise ratio, and ρ represents framing mode index; and n_{eff} represents an effective number of subchannels; and

means for selecting the value of K and z to provide a maximum number of bit positions based on the one or more determined values of b.

42. (Original) The apparatus of claim 41 wherein the effective signal-to-noise ratio γ_{eff} is an average signal-to-noise ratio of at least a subset of the channels.

43. (Previously presented) The apparatus of claim 41 wherein the size of the frame ranges from 0 to N_{max}-ρs-sz symbols, where N_{max} is a predetermined value.

44. (Previously presented) The apparatus of claim 41 further comprising:

means for determining a difference $\Theta(K)$ between a bit error rate prior to decoding and a target bit error rate (p_e) in accordance with the following relationship:

$$\Theta(K)=\omega\left(\frac{\alpha}{sn_{eff}}(K+\rho s+zs)\right)\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)$$
$$\times\left[2-\left(1-2^{-\frac{\alpha}{2sn_{eff}}(K+\rho s+zs)}\right)erfc\left(\sqrt{3\cdot 10^{\gamma_{eff}/10}/\left(2^{\frac{\alpha}{sn_{eff}}(K+\rho s+zs)+1}-2\right)}\right)\right]$$
$$-\left[1-\left(1-W(s,z,K,k)\varepsilon_S^{\frac{1}{k(0.5\cdot sz+1)}}\right)^{1/\alpha}\right]$$

wherein p_{QAM} represents a probability of error in transmitting a quadrature-amplitude-modulation waveform representing a 2^b point constellation;

comparing the value of $\Theta(0)$ and $\Theta(N_{max}\text{-}\rho s\text{-}zs)$ to 0; and

setting the value of K in response to the comparing.

45. (Previously presented) The apparatus of claim 44[[41]] wherein when $\Theta(0)<0$ and $\Theta(N_{max}\text{-}\rho s\text{-}sz)<0$, said means for setting sets $K=N_{max}\text{-}\rho s\text{-}zs$.

46. (Previously presented) The apparatus of claim 45 further comprising: means for setting $b(\gamma_{eff}, s, z)$equal to $(\alpha\ \mathrm{N_{max}})/(s\ n_{eff})$ for all values of γ_{eff} and z.

47. (Previously presented) The apparatus of claim 41 wherein when $\Theta(0)>0$ and $\Theta(N_{max}\text{-}\rho s\text{-}sz)>0$, said means for setting sets $K=N_{max}\text{-}\rho$.

48. (Previously presented) The apparatus of claim 47 wherein said means for setting sets s=1 and z=0.

49. (Currently amended) A method of selecting forward error correction parameters in a channel having a plurality of subchannels in a multicarrier communications system, comprising:

storing, in one or more tables, [[~~a~~]] net coding ~~gain~~ gains for a plurality of values of signal-to-noise ratios and numbers of subchannels, the net coding gains ~~gain being based on a one or the values of~~ corresponding to ~~the signal-to-noise ratios and one of the numbers of subchannels,~~ particular sets of forward error correction parameters, the sets including a number (*s*) of discrete multi-tone symbols in a forward-error-correction frame, a number (*z*) of forward-error-correction control symbols ~~in a discrete multi-tone symbol~~, and a maximum number of transmissions (*k*)~~, for different values of *s*, *z* and *k*~~;

determining a signal-to-noise ratio representing a subset of the subchannels to provide a representative performance measurement; and

selecting from the tables a particular set of values of *s*, *z* and *k* based on at least the representative performance measurement and the net coding gains ~~gain by applying an approximation to a subset of the values in the table~~.

50. (Previously presented) The method of claim 49 wherein the approximation is a bilinear approximation.

51. (Previously presented) The method of claim 49 wherein and the values of *s* and *z* are in accordance with the G.dmt standard.